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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,596	03/11/2004	Akira Fukuda	042184	3909
38834	7590	06/15/2005	EXAMINER	
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP 1250 CONNECTICUT AVENUE, NW SUITE 700 WASHINGTON, DC 20036			ALEMU, EPHREM	
			ART UNIT	PAPER NUMBER
			2821	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,596

Applicant(s)

FUKUDA ET AL.

Examiner

Ephrem Alemu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-10 and 13-16 is/are rejected.
- 7) ☒ Claim(s) 3,4,11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/11/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 9 and 14 is objected to because of the following informalities: in claims 9 and 14, lines 3-4, respectively replace "the workpiece supported so as to face said beam source by said stage" with --the workpiece supported by said stage-- to eliminate redundancy or correct it appropriately. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2 and 5-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Hatakeyama et al. (US 5,883,470).

Re claim 1, Hatakeyama discloses a beam source (Figs. 2, 3) comprising:

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a plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

a first electrode (i.e., downstream electrode 30, 36) disposed in the plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

an antenna (i.e., excitation coil 25) disposed so as to face the first electrode (i.e., downstream electrode 30) for generating plasma in the plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

a second electrode (i.e., upstream electrode 29, 35) disposed in the plasma generating chamber (i.e., discharge tube 21) so as to face the first electrode (i.e., downstream electrode 30, 36) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34); and

a power supply (32) for applying a voltage between the first electrode (i.e., downstream electrode 30) and the second electrode (i.e., upstream electrode 29, 35) to extract ions from the plasma generated by the antenna (i.e., excitation coil 25) (Figs. 2, 3; Col. 4, lines 25-31; Col. 5, lines 2-5 & 38-40).

Re claim 2, Hatakeyama further discloses the antenna (i.e., excitation coil 25) is disposed outside of the plasma generating chamber (i.e., discharge tube 21), wherein the second electrode (i.e., upstream electrode 35) is disposed inwardly of the antenna (Fig. 3; Col. 5, lines 2-34).

Re claim 5, Hatakeyama further discloses the first electrode (i.e., downstream electrode 30, 36) comprises an orifice plate having a plurality of orifices (i.e., openings) for neutralizing the ions extracted from the plasma (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-53).

Re claim 6, Hatakeyama discloses a beam source (Fig. 3) comprising:

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a plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

a first electrode (i.e., downstream electrode 36) disposed in the plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

an antenna (i.e., excitation coil 25) disposed so as to face the first electrode (i.e., downstream electrode 36) for generating plasma in the plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 19-23; Col. 5, lines 2-34);

a second electrode (i.e., upstream electrode 35) disposed between the antenna and the first electrode (i.e., downstream electrode 36) in the plasma generating chamber (i.e., discharge tube 21), the second electrode (i.e., upstream electrode 35) having a ring shape so as to surround the plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34); and

a power supply (32) for applying a voltage between the first electrode (i.e., downstream electrode 36) and the second electrode (i.e., upstream electrode 35) to extract ions from the plasma generated by the antenna (i.e., excitation coil 25) (Fig. 3; Col. 4, lines 25-31; Col. 5, lines 2-5 & 38-40).

Re claim 7, Hatakeyama further discloses a container (i.e., discharge tube 21 which is also plasma generating chamber) for defining the plasma generating chamber (i.e., discharge tube 21), the container having a wall, which serves as the second electrode (i.e., upstream electrode 35) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-53).

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Re claim 8, Hatakeyama further discloses the first electrode (i.e., downstream electrode 36) comprises an orifice plate having a plurality of orifices (i.e., openings) for neutralizing the ions extracted from the plasma (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-53).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9-10 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatakeyama et al. (US 5,883,470) in view of Fig. 1 of applicants' admitted prior art (AAPA).

Re claim 9, Hatakeyama discloses a beam source (Figs. 2, 3) comprising:

a plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

a first electrode (i.e., downstream electrode 30, 36) disposed in the plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

an antenna (i.e., excitation coil 25) disposed so as to face the first electrode (i.e., downstream electrode 30) for generating plasma in the plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

a second electrode (i.e., upstream electrode 29, 35) disposed in the plasma generating chamber (i.e., discharge tube 21) so as to face the first electrode (i.e., downstream electrode 30, 36) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34); and

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a power supply (32) for applying a voltage between the first electrode (i.e., downstream electrode 30) and the second electrode (i.e., upstream electrode 29, 35) to extract ions from the plasma generated by the antenna (i.e., excitation coil 25) (Figs. 2, 3; Col. 4, lines 25-31; Col. 5, lines 2-5 & 38-40).

Hatakeyama does not show a beam processing apparatus comprising: a stage for supporting a workpiece. However, Fig. 1 of AAPA shows a beam processing apparatus including a stage for supporting workpiece X for the purpose of supporting the workpiece during fabrication. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a beam processing apparatus including a workpiece support as taught in Fig. 1 of AAPA for the beam source of Hatakeyama for no other reason than providing a support to the workpiece during fabrication using Hatakeyama's beam source.

Re claim 10, Hatakeyama further discloses the antenna (i.e., excitation coil 25) is disposed outside of the plasma generating chamber (i.e., discharge tube 21), wherein the second electrode (i.e., upstream electrode 35) is disposed inwardly of the antenna (Fig. 3; Col. 5, lines 2-34).

Re claim 13, Hatakeyama further discloses the first electrode (i.e., downstream electrode 30, 36) comprises an orifice plate having a plurality of orifices (i.e., openings) for neutralizing the ions extracted from the plasma (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-53).

Re claim 14, Hatakeyama discloses a beam source (Fig. 3) comprising:

a plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

a first electrode (i.e., downstream electrode 36) disposed in the plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34);

an antenna (i.e., excitation coil 25) disposed so as to face the first electrode (i.e., downstream electrode 36) for generating plasma in the plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 19-23; Col. 5, lines 2-34);

a second electrode (i.e., upstream electrode 35) disposed between the antenna and the first electrode (i.e., downstream electrode 36) in the plasma generating chamber (i.e., discharge tube 21), the second electrode (i.e., upstream electrode 35) having a ring shape so as to surround the plasma generating chamber (i.e., discharge tube 21) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34); and

a power supply (32) for applying a voltage between the first electrode (i.e., downstream electrode 36) and the second electrode (i.e., upstream electrode 35) to extract ions from the plasma generated by the antenna (i.e., excitation coil 25) (Fig. 3; Col. 4, lines 25-31; Col. 5, lines 2-5 & 38-40).

Hatakeyama does not show a beam processing apparatus comprising: a stage for supporting a workpiece. However, Fig. 1 of AAPA shows a beam processing apparatus including a stage for supporting workpiece X for the purpose of supporting the workpiece during fabrication. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a beam processing apparatus including a workpiece support as taught in Fig. 1 of AAPA for the beam source of Hatakeyama for no other reason than providing a support to the workpiece during fabrication using Hatakeyama's beam source.

Re claim 15, Hatakeyama further discloses a container (i.e., discharge tube 21 which is also plasma generating chamber) for defining the plasma generating chamber (i.e., discharge tube 21), the container having a wall, which serves as the second electrode (i.e., upstream electrode 35) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-53).

Re claim 16, Hatakeyama further discloses the first electrode (i.e., downstream electrode 36) comprises an orifice plate having a plurality of orifices (i.e., openings) for neutralizing the ions extracted from the plasma (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-53).

Allowable Subject Matter

7. Claims 3, 4, 11 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fail to teach or suggest, alone or in combination, the following limitations: “wherein the antenna has a spiral shape, wherein the second electrode has a spiral shape positioned between adjacent spiral lines of the spiral shape of the antenna” as claimed in claims 3 and 11; and “wherein the antenna comprises a plurality of divided antennas, wherein the second electrode comprises a plurality of divided second electrodes positioned between adjacent divided antennas” as claimed in claims 4 and 12.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ichiki et al. (US Pubs. 6,861,643 & 6,861,642) and Kinoshita et al. (US 5,818,040); also teach similar inventive subject matter.

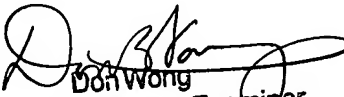
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Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ephrem Alemu whose telephone number is (571) 272-1818. The examiner can normally be reached on M-F Flex hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don K Wong can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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